

# DYSLIPIDEMIA

**Manganese**  
Cofactor to an antioxidant (superoxide dismutase) that repairs damage to blood vessels caused by oxidized LDL (low density lipoprotein).<sup>1,2</sup>

**Magnesium**  
Deficiency causes pro-atherogenic (heart-disease causing) changes in lipoprotein metabolism; Protects LDL (low density lipoprotein) from being oxidized.<sup>3,4</sup>

**Vitamin C**  
Protects LDL from oxidation, thus making it less “sticky” and prone to atherosclerosis (clogging of arteries); Prevents white blood cells (monocytes) and oxidized LDL from sticking to blood vessel wall; Lowers Lp(a) in some people.<sup>5,6,7</sup>

**Vitamin D**  
Suppresses foam cell formation thus reducing risk of lipid-related arterial blockages; Deficiency linked to dyslipidemia.<sup>8,9</sup>

**Zinc**  
Suboptimal zinc raises dangerous lipoproteins that promote vascular inflammation and arterial plaque formation; Cellular zinc controls the gene that makes heart-protective HDL (high density lipoprotein).<sup>34,35,36</sup>

**Vitamin B3**  
Niacin (B3) effectively lowers the highly atherogenic Lp(a) by decreasing its rate of synthesis in the liver.<sup>10,11</sup>

**Selenium**  
Prevents post-prandial (after a meal) changes in lipoproteins that make them susceptible to oxidation and thus harmful.<sup>32,33</sup>

**Vitamin B5**  
Favorably alters low density lipoprotein metabolism and reduces triglycerides; Full benefit of lipid lowering effects may not be seen for up to four months.<sup>12,13</sup>

**Copper**  
Several copper-dependent enzymes affect lipoprotein metabolism; Deficiency contributes to fatty buildup in arteries caused by dyslipidemia.<sup>29,30,31</sup>

**Carnitine**  
In supplementation trials, carnitine lowers triglycerides, oxidized LDL and the atherogenic Lp(a); This effect is likely due to its role in transporting fatty acids into cells so they can be used as fuel.<sup>14,15,16</sup>

**Coenzyme Q10**  
It is well established that statins, often prescribed for dyslipidemia, deplete CoQ10; Lowers Lp(a) and improves efficacy of some dyslipidemia meds.<sup>27,28</sup>

**Chromium**  
Specifically improves the dyslipidemia that accompanies insulin resistance; May increase HDL; Synergistic effect with niacin (B3) for dyslipidemia.<sup>24,25,26</sup>

**Choline**  
Regulates HDL metabolism; Part of the enzyme lecithin-cholesterol acyltransferase that has a major impact on lipoprotein metabolism.<sup>22,23</sup>

**Inositol**  
Decreases small, dense LDL especially in patients with metabolic syndrome; Lowers triglycerides.<sup>19,20,21</sup>

**Lipoic Acid**  
Improves lipid profile by reducing small, dense LDL (dangerous type); Protects vascular lining from oxidized cholesterol.<sup>17,18</sup>

*Additional nutrients affect lipid metabolism. This list is non-exhaustive.*